

Thai University Student Schemas and Anxiety Symptomatology

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Abstract

This study explores how early maladaptive schemas (EMSs) contribute to the development of anxiety symptomologies among college undergraduates (N=110). The study was conducted by assessing the correlations between 18 schemas derived from Young's model of Early Maladaptive Schemas (EMSs) and anxiety symptoms using Zung Self-Rating Anxiety Scale (SAS), self-reported anxiety assessment arranging severity into 4 indexes ranging from normal range, minimal to moderate anxiety, marked to severe anxiety, and extreme anxiety. The study examined how each of the 18 individual EMSs serves as predictors of anxiety symptomatology in college students. The results of the study show that 14 out of 18 early maladaptive schemas (EMSs) were predictive of anxiety symptoms. Aside from the association of anxiety symptoms and EMSs, the findings of the study reveal the important role of gender and ethnicity in predicting anxiety and individual EMSs. *Unrelenting Standard/Hyper criticalness* and *Approval-Seeking/Recognition-Seeking* were the two leading EMSs characterized by the majority of the respondents may be explained by the Thai collectivist culture which incorporates the values that form a part of these schemas as socially desirable and emphasizes the importance of conformity and approval of others.

Keywords: maladaptive, cognitive, schemas, students, international, Thailand

1. Introduction

1.1 Overview of Anxiety and EMS Vulnerability among College Students

Several studies have addressed the vulnerability of college students in developing psychological disorders. The prevalence of common psychological disorders such as depression, panic disorder, agoraphobia, and substance abuse disorders increases between the period of adolescence and early adulthood; as such, about 1 in 5 adolescents have experienced a psychological disorder (Costello, Copeland & Angold, 2011). According to the American Psychological Association, anxiety accounts for over 41 percent of psychological disorders among college students (College Health, 2013). Approximately one half of college students met DSM-IV diagnostic criteria for at least one psychiatric disorder, specifically alcohol abuse, personality disorders, depression and anxiety disorders (Blanco et al., 2008). The majority of psychological disorders have their first period of onset in young adulthood (Kessler et al., 2005). About one third of the university students of various cultures meet the diagnostic criteria for anxiety and depression (Allgöwer et al., 2001). Additionally, having experienced a psychological disorder between adolescence and early adulthood increases the risk of carrying that disorder into adulthood (Clark, et al., 2007; Fergusson, et al., 2007; & Pine et al., 1998). Therefore, Zlvin, Eisenberg, Gollust, and Golberstein (2009) suggested that the prevention, identification, and treatment of psychological disorders among college students is a promising path to address and reduce the burden of psychological disorders manifesting into adulthood.

College students face a variety of stressors, varying from academic issues, friends, family, romantic relationships, time management, and adjustment to living on their own which often cause distress (Kumaraswamy, 2013). In some cases, it manifests into serious psychological symptoms, predominantly anxiety (Kumaraswamy, 2013). Central to the development of anxiety is the vulnerability of the individual's cognitive structure. Beck (1976) proposed that there is an existing hierarchy of cognitions, ranging from surface-level automatic thoughts down to cavernous levels of cognitive schemas. These schemas refer to organized structures of stored information that contain individuals' perceptions of self and others, goals, expectations, and memories (Beck & Dozois, 2011). As such, a schema guides subsequent cognitive processes including attention, interpretation, and retrieval of stored

information. Hence, automatic thoughts that are superficial and limited to a given situation are functionally related and influenced by the deeper cognitive schemas. Later Young extended Beck's work and identified various types of cognitive schemas which are now referred to as early maladaptive schemas (EMSs) (Young, 1990; Young et al., 2003). Young (1990) hypothesized that these EMSs are the underlying factors that contribute to several forms of psychological disorders. According to Young (1999), early maladaptive schemas (EMSs) are grouped into five domains: disconnection and rejection, impaired autonomy and performance, impaired limits, excessive responsibility and standards, and unclassified schemas.

Concerning the relationship between early maladaptive schemas with high anxiety levels and anxiety disorders, Hinrichsen, Waller, and Emanuelli (2004) demonstrated through the study of patients with panic disorder that Vulnerability to Harm or Illness (VH) was highly linked to severity of panic disorder at 48.5%. Abandonment/Instability (AB) and Emotional Inhibition (EI) were associated with social phobia, which explained 25.9% of the variance. On the other hand, Price (2007) shown that Defectiveness/Shame (DS), Dependence/Incompetence (DI), and Enmeshment/Undeveloped Self (EM) were the major EMSs responsible for cognitive intrusions over traumatic events. For Obsessive-Compulsive Disorder, Dependence/Incompetence (DI) was significantly correlated to the severity of its symptoms (Atalay et al., 2008). Therefore, this study adopted the cognitive psychological theory of schemas by specifically focusing on Young's model of early maladaptive schemas (EMSs) in detecting cognitive vulnerabilities in developing anxiety disorders among college students who are at risk of having anxiety symptoms and developing anxiety disorders. In doing so, this study tested statistical correlations between the early maladaptive schemas and anxiety level among college students at Mahidol University International College, Thailand, to determine whether there are particular schemas that are associated with the greater levels of anxiety.

1.2 Research Objectives

The present study aims to determine whether there are particular schemas that are associated with the development of anxiety symptoms. This included:

- 1) Explore the relationship between EMSs and anxiety symptoms.
- 2) Predict the degree of anxiety symptoms based on the interaction with each specific EMS to learn if there is any particular EMS associated with vulnerability.
- 3) Examine the relevance of demographic factors in determining EMSs and level of anxiety.

1.3 Literature Review

Anxiety comes in many forms—it can be a generalized anxiety disorder (GAD), obsessive-compulsive disorder (OCD), panic disorder, posttraumatic stress disorder (PTSD), acute stress disorder, social anxiety disorder, or a specific phobia; or it can only exhibit a few symptoms that do not manifest into a full-blown anxiety disorder (Anxiety, 2010). Everyone experiences anxiety from time to time. In fact, mild anxiety is very beneficial and adaptive as it helps a person to become more alert and focused when confronted with difficulties, challenges, or threatening situations. A student who gets anxious about an exam is more likely to be prepared and get a better grade compared to a student who does not experience exam anxiety. Indeed, for the healthy, much of the university experience can be perceived from the eustress, not distress, perspective. Nonetheless, there are some individuals who experience intense fear or worry that does not necessarily subside. In these cases, the effects of anxiety are overwhelming to the point that they interfere with individual's daily functioning. A recent survey done by the National Comorbidity Survey Replication (NCS-R) reported that the estimated global prevalence of anxiety disorders among US adults aged 18 and older is about 18 percent in a given year (Kessler et al., 2006). For people with high anxiety levels, anxiety leads to a change in the way in which people live, preventing them from doing things or living life the way they want.

So, how do we marginalize the effects of anxiety? According to Beck's cognitive theory, there are deep cognitive structures called schemas embodied in every individual mind which allow us to process the information and interpret it in our own distinctive way (Persons et al., 2001). The symptoms of anxiety arise as a result of the individual maladaptive schemas. Thus, by modifying maladaptive schemas, the chance of an individual experiencing anxiety symptoms or disorders will then be reduced.

According to cognitive theory, maladaptive schemas may be responsible for certain perceptions of reality, negative beliefs, and thoughts which then, lead to anxiety. Young (1990, 2010) proposed that early childhood traumas and adverse experiences cause individuals to adopt particular perceptions and beliefs in adaptation with traumatic experiences at that point in time, however, some became fixated with their perceptions or beliefs, although the situation, time, and context had already changed. As a result, those particular perceptions or beliefs

become maladaptive. An EMS is acquired as a result of the human drive for consistency (Young, 2010). Maladaptive schemas are often conceived of as self defeating core traits or themes that shape one's view of self and others (Vreeswijk et al., 2014). People feel "right" when they are familiar with a particular situation or experience even though it is not always positive. As a result, they are drawn toward events that often trigger and reinforce their schemas. Schemas can be regarded as a set of priori truths that influence how individuals think, feel, act, and relate to others (Young, 2010).

In cognitive psychology, a schema is the deepest foundation of man's cognitive structure. Young (2010) defined early maladaptive schemas as a broad, pervasive and significantly dysfunctional behavioral pattern that developed from childhood and adolescence, and elaborated throughout a person's life. The schema exerts influence over intermediate beliefs and automatic thoughts. A schema is an unconscious process that influences thought, emotion, and behavior (Riso et al., 2007). It refers to a pattern imposed by an individual's reality or experience which helps explain the event by mediating perception, and guiding responses in a particular situation (Young et al., 2010). The schema is the principle of mind that helps individuals makes sense of experience. Of course, not everyone has similar schemas, which explains why people who encounter similar situations perceive or react differently.

Young (2010) defined early maladaptive schemas as "self-defeating emotional and cognitive patterns that begin early in our development and repeat throughout life". It originates from the child's unmet core emotional needs (Young et al., 2010). Unhealthy childhood experiences, usually with their family are the most common cause of Early Maladaptive Schemas. The five core emotional needs includes firstly, secure attachment to others for safety, stability, nurturance, and acceptance; secondly, autonomy, competence, and sense of identity; thirdly, freedom to express one's needs and emotions; fourthly, spontaneity and play; and lastly, realistic limits and self-control (Young et al., 2010). Eighteen early maladaptive schemas (EMSs) were identified and grouped into five major categories by Young et al. (2010). These are Disconnection and Rejection, Impaired Autonomy and Performance, Impaired Limits, Excessive Responsibility and Standards, and Unclassified Schemas. Schemas are maintained and reinforced through three schema-driven behavioral processes: surrender, avoidance, and overcompensation (Young et al., 2010). Young (2010) asserts that although family exerts the major influence over children's cognitive development, schools, groups, community, and various types of societal institutions also play a crucial role in the formation of individual schemas—it determines the way in which an individual lives—how they think, behave, and relate with other members in society. Nonetheless, the strongest or most influential schemas are often developed earliest in life within a care giving system. This explains why the dynamic of one's family is the primary determinant of one's schema- whether or not it will be adaptive or maladaptive.

Research regarding EMS relevance within education is quite lacking. So far, only two studies indicate the relationship between academic anxiety and higher levels of early maladaptive schemas. A study done by Segal (1990) points out that an individual who perceives himself as defective in education often has lower self-esteem and self-imposed anxiety. This corresponded to Young's *defectiveness/shame* schema. Having such beliefs would pressure individuals to excessively self-assess and raise self-pressure which results in high levels of anxiety. Isanejad, Heidary, Rudbari, and Liaghatdar (2012) found that *failure, approval-seeking/recognition-seeking*, and *unrelenting standard/hypercriticalness* are schemas linked to high academic anxiety. Schemas of failure are characterized by the pessimistic viewpoint and a frequent focus over negative aspects in their achievement which then give rise to anxiety. Whereas, *approval-seeking/recognition-seeking* implied the need for admiration and recognition by others, hence, failure in education will cause them to lose recognition and admiration from others. This creates pressure for students to always do well in education to avoid the possibility of disappointing others which is then responsible for a high level of anxiety. Also, the standards individuals have set in achieving their goals also led to high levels of anxiety. An individual with an *unrelenting standard/hypercriticalness* schema tends to devise a fixed and highly unworkable plan and puts themselves in the state of tension and conflict which are the main components of anxiety. The anticipation of failure increased the possibility of impaired performance; seeking recognition and placing one's self-esteem upon admiration and recognition from others leads to more pressure, therefore, more anxiety; and an individual's perfectionist tendency leads to the focus of achieving an unrelenting goal while limiting his/herself the possibility of pleasures or relaxation which is then responsible for higher levels of anxiety (Isanegad et al., 2010).

1.4 Limitation of the Existing Literature

There are many publications on the association between EMSs and personality disorders such as *Abandonment and Mistrust/Abuse* as predicting schemas of Borderline Personality Disorder (Reeves & Taylor, 2007); *Abandonment, Subjugation, and Emotional Inhibition* as predicting schemas of Avoidant Personality Disorder

(Car & Francis, 2010); and *Entitlement* as predicting schemas for Narcissistic Personality Disorder (Zeigler et al., 2011). Several studies have already explored the links between EMSs and the symptoms of anxiety disorders across various samples; both clinical and nonclinical. Over 12 out of 15 assessed EMS are strongly correlated with the symptoms of anxiety at 52 % (Hawke & Provencher, 2011). The major contributors of anxiety symptoms are 1) *Abandonment*, 2) *Vulnerability to Harm or Illness*, 3) *Failure*, 4) *Self-Sacrifice*, and 5) *Emotional Inhibition* (Hawke & Provencher, 2011). For each specific disorder, De Hedley, Hoffart, and Sexton (2001) have found that Vulnerability to Harm or Illness is the core EMS to predicting a panic disorder. Pinto-Gouveia, Castilho, Galhardo, and Cunha (2006) have shown that the EMSs of *Abandonment* and *Emotional Inhibition* are the major predictors of social anxiety disorder. Another study done by Dutra, Callahan, Forman, Mendelsohn, and Herman (2008) predicted *Emotional Inhibition*, *Unrelenting Standards* and *Mistrust/Abuse* as the leading EMSs accounting for the PTSD symptoms. And for OCD, the most relevant schemas includes *Defectiveness*, *Alienation*, *Failure*, and *Vulnerability to Harm or Illness* (Kim et al., 2014).

It is evident that the prevalence of youth anxiety increases approximately 2 to 3 times the risk of having recurrent anxiety during adulthood (Clark, Rodgers, Caldwell, Power, & Stansfeld, 2007; Fergusson, Boden, & Horwood, 2007; & Pine, Cohen, Gurley, Brook, & Ma, 1998). A study by Shariati, Shariati, and Daryoush (2014) shows that there is a direct correlation between anxiety and maladaptive schemas whereby the increase in anxiety level will lead to more maladaptive schemas among high school students; especially *Dependence/Incompetence* and *Emotional Deprivation* schemas which were predictive variables of overt anxiety. Furthermore, Calvete, Orue, and Hankin (2012) also found that disconnection and rejection domain predicted the increase in anxious social thoughts.

Thus, it is important for this study to investigate the college students' schemas to learn if there are any specific EMSs that are related to general anxiety symptoms which are not specific to any disorder to identify the cognitive basis for anxiety symptoms. Rather than studying the prevalence of anxiety disorders, this study focuses on general symptoms of anxiety in order to examine a general pattern of EMSs associated with anxiety as it would help predict a student's predisposition to anxiety symptoms that might not be as serious as a full-blown disorder. Nonetheless, attention needs to be given to the early indication of potential anxiety disorders.

2. Method

Participants were undergraduate students of Mahidol University International College in Thailand. They were recruited from 9 classes covering both science and liberal art majors. This included '*Psychology of Motivation*', '*Developmental Psychology*', '*Mammalian physiology*', '*Scientific Research and Presentation*', '*Abstract Algebra*', '*Business Finance*', '*Society, Politic, and Economic in East Asia*', '*International Relations*' and '*Principle and Mathematical Concepts*' to get representatives from most majors and academic years. Voluntary of participation, informed consent, and confidentiality of the participating individuals are the central concerns of this study. As soon as the data collection took place, all data was made anonymous.

2.1 Participant Characteristics

The study contains a sample of 110 undergraduate students, of which 60.9% were female and 39.1% were male. Participants came from adolescent and early young adult age groups ranging from 18 to 25 years old, with a mean of 21.27 in which 10% were between the ages of 18 and 19, 50.9% were between the ages of 20-21, and 39.1% were between the ages of 22-25. The majority of the participants were single (62.7%), following by participants who were in relationship (35.5%) while 1.8% were in complicated relationship status. The ethnicity varied among participants, of which 51.8% were Thai; 10% Chinese, 8.1% mixed Thai, 7.3% Indian, 5.5% Korean, 5.5% American, 2.7% Burmese, 2.7% Taiwanese, 1.8% Bhutanese, 1.8% European, 1.8% Japanese, and 0.9 Latin-American. In terms of major field of study, most participants (63.6%) were from International Business, Biomedical Science, and Social Science majors. Whereas, the rest (36.4%) come from a variety of majors including Applied Mathematics, Business Economics, Communication Designs, Computer Engineering, Computer Science, Environmental Science, Finance, Food Science, Marketing, and Tourism & Hospitality Management.

2.2 Assessment Measures

Participants were asked to complete a demographic questionnaire to present information of their age, gender, ethnicity, major, academic year, marital status, as well as source of stress. Then, these factors, together with the results from the Zung Self-Rating Anxiety Scale (SAS) and the Young Schema Questionnaire-Short Form Revised (YSQ-SF3) were statistically tested with one another in search of the link between anxiety level, early maladaptive schemas (EMSs), and demographic variables.

The Zung Self-Rating Anxiety Scale (SAS) is a self-administered method of assessing anxiety symptoms. The scale focuses on the general symptoms of anxiety, with each response using a 5-point Likert scale from 'none of the time' to 'most of the time.' The anxiety symptoms are calculated through summing and averaging responses across the 20 negative and positive biological and psychological symptoms related to anxiety. Negative sample items include rating the symptoms like "My arms and legs shake and tremble," and "You get upset easily or feel panicky." Positive sample items include rating of "You feel calm and can sit still easily" and "I can fall asleep easily and get a good night's rest". This was used to measure the symptoms of anxiety over the past several days by assessing attribution for anxiety symptomologies in which the results were arranged into 4 scale included 'within normal range', 'minimal to moderate anxiety', 'marked to severe anxiety', and 'most extreme anxiety.'

The Young Schema Questionnaire-Short Form Revised (YSQ-SF3) contains 90 items self-report measure that determine individual schemas arranging into 18 subscales. This includes 1) Emotional Deprivation; 2) Mistrust/Abuse; 3) Emotional Inhibition; 4) Defectiveness/Shame; 5) Social Isolation/ Alienation; 6) Dependence/Incompetence; 7) Abandonment/Instability; 8) Vulnerability to Harm or Illness; 9) Enmeshment/Undeveloped Self; 10) Failure; 11) Subjugation/Invalidation; 12) Entitlement/Grandiosity; 13) Insufficient Self-Control/Self-Discipline; 14) Self-Sacrifice; 15) Unrelenting Standards/Hypercriticalness; 16) Approval-Seeking/Recognition-Seeking; 17) Negativity/Pessimism; and 18) Punitiveness (Young, 2010). Participants were asked to rate items in terms of how they feel about their lives and who they are on a 6-point Likert scale from 'Completely untrue of me' to 'Describe me perfectly.' Then given a total score which determined by summing responses from 5 corresponding questions for each scale where the total scores are ranged from 0-30, with higher total scores indicating greater dysfunction or characterizing an extremely high degree of particular early maladaptive schemas (EMSSs).

3. Results

The statistical analyses were conducted using the PASW (Predictive Analytics Software) program starting with descriptive statistics which measured central tendency, distribution, and standard deviation to examine the outlier values. Next, correlation statistical analyses were conducted between anxiety and each individual EMSSs in particular which were two-tailed with an α of 0.05, unless otherwise noted. The chi-square χ^2 test is used to control the results from Pearson's r to ensure the consistency of the correlations between variables. Lastly, the Exploratory Data Analysis (EDA) was used to explore whether there are any relevant demographic variables that influence anxiety and EMSSs. In addition, the internal consistency of the sample's score of the YSQ-SF3 was examined to ensure reliability of the measurement; that is whether or not it measures the same construct, through observing the degree to which each items inter-correlated with one another using Cronbach's alpha.

3.1 Data Cleaning and Preliminary Data Analyses

All data that included demographic, anxiety, and EMSSs variables were examined for normality and outliers via descriptive statistics which were used to check for any possible errors or missing variables in data entry. Then the data from Zung Self-Rating Anxiety Scale (SAS) and Young Schema Questionnaire-Short Form Revised (YSQ-SF3) were processing through univariate analysis to assess central tendency and dispersion of each variable.

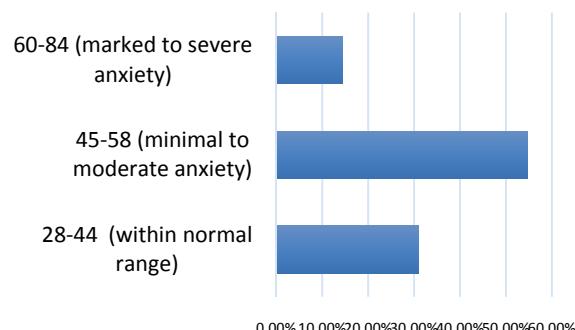


Figure 1. Distribution of anxiety's score

According to Figure 1, the mean of anxiety score is at 49.66 (minimal to moderate anxiety) with the range at 56 signifying a great difference in anxiety score among respondents. The distribution of anxiety scores can be seen in Figure 1 where over 54.6% scored between 45-58. This means that over half of the respondents were within the *minimal to moderate anxiety* category; followed by 30.9% that scored under 44 which is considered *within the normal range*, while the minority of 14.5% scored over 60 which were categorized under *most extreme anxiety*.

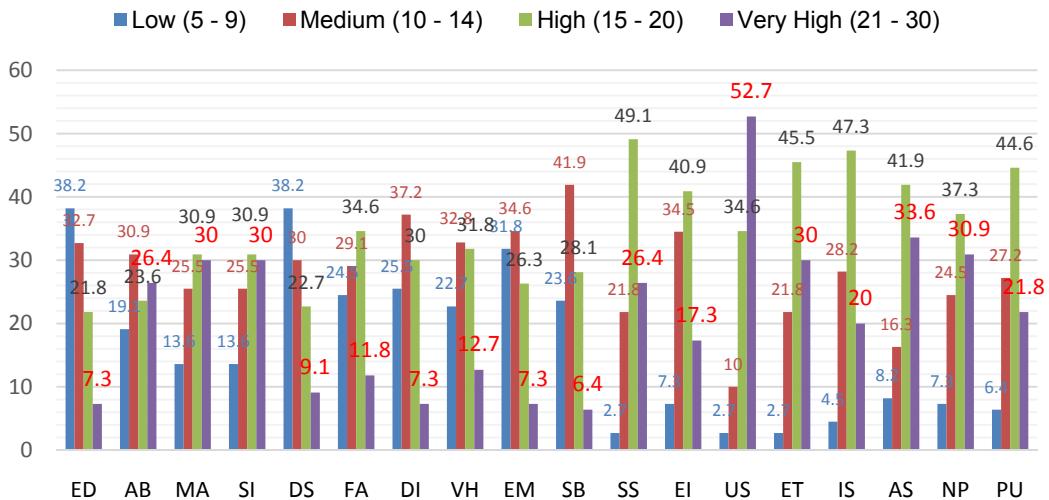


Figure 2. Distribution of EMSs (percentage)

In Figure 2, the distribution of EMSs is shown in terms of percentages. Under the *very high* scale, over half of the respondents' (52.7%) results were in *Unrelenting Standard/Hypercriticalness* (US); following with *Approval-Seeking/Recognition-Seeking* (AS) at 33.6%; *Negativity/Pessimism* (NP) at 30.9%; *Entitlement/Grandiosity* (ET), *Social Isolation/Alienation* (IS), and *Mistrust/Abuse* at 30%. The lowest EMSs under *very high* scale included *Self-Sacrifice* (SS), *Unrelenting Standard/Hypercriticalness* (US), and *Entitlement/Gradiosity* (ET) which were at only 2.7%. Most respondents were under *low* scale in *Emotional Deprivation* (ED) and *Defectiveness/Shame* (DS) which were 38.2%. On the other hand, in *high* scale where individuals might not suffer with EMSs as much as those who were under *very high* scale, they were still considered very vulnerable. Under *high* scale, the leading EMSs were *Self-Sacrifice* (SS) at 49.1%; *Isolation/Alienation* (IS) at 47.3%; *Entitlement/Grandiosity* (ET) at 45.5%; *Punitiveness* (PU) at 44.6 % and *Approval-Seeking/Recognition-Seeking* (AS) at 41.9%. In terms of outliers, there were no outliers shown in any of the EMSs while for anxiety the outlier was 84 that shows relatively no change to the statistical analysis when removed.

3.2 Cronbach's Alpha

Cronbach's alpha of the total score of the YSQ-SF3 of this study's sample was .893. In which all 18 subscales had *good* reliability that were consistently ranged within close proximity: from .882 to .897. See Table 1. As a result, all items were to be measuring the same construct, which are therefore correlated with one another. As can be seen in the Table 1, *Self-Sacrifice* (SS) shows the highest reliability level at ($\alpha=.897$), following by *Unrelenting Standard/Hypercriticalness* (US) at ($\alpha=.896$), *Entitlement/Grandiosity* (ET) at ($\alpha=.893$) until one which shows the least reliability level among 18 subscales which was *Vulnerability to Harm/Illness* (VH) which ($\alpha=.882$). In any case, the internal consistency of YSQ-SF3 as measured with individual sub-scale was *good* as all were in the range of $0.7 \leq \alpha \leq 0.9$.

Table 1. Cronbach's Alpha of each individual early maladaptive schemas (EMSSs)

Early Maladaptive Schemas (EMSSs)	E(α)
Emotional Deprivation (ED)	.888
Abandonment/Instability (AB)	.885
Mistrust/Abuse (MA)	.886
Social Isolation/Alienation (SI)	.884
Defectiveness/Shame (DS)	.883
Failure (FA)	.889
Dependence/Incompetence (DI)	.886
Vulnerability to Harm/Illness (VH)	.882
Enmeshment/Undeveloped Self (EM)	.886
Subjugation/Invalidation (SI)	.885
Self-Sacrifice (SS)	.897
Emotional Inhibition (EI)	.884
Unrelenting Standard/Hypercriticalness (US)	.896
Entitlement/Grandiosity (ET)	.893
Insufficient Self-Control/Self-Discipline (IS)	.891
Approval-Seeking/Recognition-Seeking (AS)	.889
Negativity/Pessimism (NP)	.886
Punitiveness (PU)	.885

3.3 Correlation Analysis—Pearson Product-Moment Correlation Coefficient

The primary goal of the study is to explore the relationship between anxiety level and early maladaptive schemas and to determine the degree of association. As a result, a Pearson product-moment correlation coefficient was computed to assess the relationship between anxiety level and Early Maladaptive Schemas (N=110). Correlations ranged from -.076 to .461, of which 14 were statistically significant. Results showed that 14 of the 18 EMSSs were positively associated with SAS scores. This included *Abandonment/Instability* ($r(.429)$, $p = .000 < .05$), *Mistrust/Abuse* ($r(.322)$, $p = .001 < .05$), *Social Isolation/Alienation* ($r(.343)$, $p = .000 < .05$), *Defectiveness/Shame* ($r(.355)$, $p = 0.000 < .05$), *Failure* ($r(.297)$, $p = .002 < .05$), *Dependence/Incompetence* ($r(.0399)$, $p = .000 < .05$), *Vulnerability to Harm or Illness* ($r(.461)$, $p = .000 < .05$), *Enmeshment/Undeveloped Self* ($r(.277)$, $p = .003 < .05$), *Subjugation/Invalidation* ($r(.412)$, $p = .000 < .05$), *Emotional Inhibition* ($r(.274)$, $p = .004 < .05$), *Insufficient Self-Control/Self-Discipline* ($r(.316)$, $p = .001 < .05$), *Approval-Seeking/Recognition-Seeking* ($r(.261)$, $p = .006 < .05$), *Negativity/Pessimism* ($r(.417)$, $p = .000 < .05$), and *Punitiveness* ($r(.246)$, $p = .010 < .05$).

Table 2. Pearson's correlation coefficient between the score from anxiety and EMSSs

		Anxiety Level		Anxiety Level	
		Pearson Correlation	1	Pearson Correlation	1
Anxiety Level	Sig. (2-tailed)	Anxiety Level		Anxiety Level	
		N	110	N	110
ED	Pearson Correlation	.155		Pearson Correlation	.412**
	Sig. (2-tailed)	.105		Sig. (2-tailed)	.000
AB	N	110		N	110
	Pearson Correlation	.429**		Pearson Correlation	.105
	Sig. (2-tailed)	.000		Sig. (2-tailed)	.276

	N	110		N	110
	Pearson Correlation	.322 ^{**}		Pearson Correlation	.274 ^{**}
MA	Sig. (2-tailed)	.001	EI	Sig. (2-tailed)	.004
	N	110		N	110
	Pearson Correlation	.343 ^{**}		Pearson Correlation	-.076
SI	Sig. (2-tailed)	.000	US	Sig. (2-tailed)	.429
	N	110		N	110
	Pearson Correlation	.355 ^{**}		Pearson Correlation	.143
DS	Sig. (2-tailed)	.000	ET	Sig. (2-tailed)	.137
	N	110		N	110
	Pearson Correlation	.297 ^{**}		Pearson Correlation	.316 ^{**}
FA	Sig. (2-tailed)	.002	IS	Sig. (2-tailed)	.001
	N	110		N	110
	Pearson Correlation	.399 ^{**}		Pearson Correlation	.261 ^{**}
DI	Sig. (2-tailed)	.000	AS	Sig. (2-tailed)	.006
	N	110		N	110
	Pearson Correlation	.461 ^{**}		Pearson Correlation	.417 ^{**}
VH	Sig. (2-tailed)	.000	NP	Sig. (2-tailed)	.000
	N	110		N	110
	Pearson Correlation	.277 ^{**}		Pearson Correlation	.246 ^{**}
EM	Sig. (2-tailed)	.003	PU	Sig. (2-tailed)	.010
	N	110		N	110

**. Correlation is significant at the 0.01 level (2-tailed).

*. Correlation is significant at the 0.05 level (2-tailed).

Over 14 out of 18 EMSs are strongly correlated to the SAS scores as shown in Figure 3 which summarized from the results done by Pearson's test, ranging from 46.1% (*Vulnerability to Harm or Illness*) to 24.6% (*Punitiveness*). For the uncorrelated EMSs, Domain 1 Disconnection & Rejection contains *Emotional Deprivation* which was one of the EMSs that were not significantly correlated; Domain 3 Impaired Limits contains *Entitlement/Grandiosity*, and Domain4 Excessive Responsibility & Standard is the least correlated included *Self-Sacrifice* and *Unrelenting Standard/Hypercriticalness* ($r(-.076)$, $p = .429 > 0.5$) which was the only negative correlation existed.

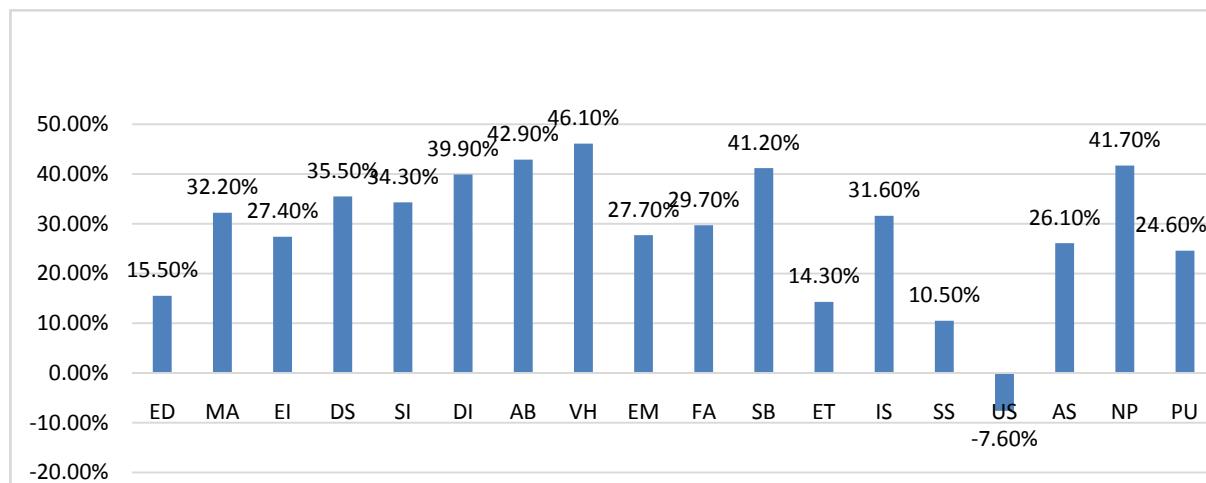


Figure 3. Percentage of correlations between early maladaptive schemas and anxiety scores

3.4 Chi-Square Tests

A chi-square test was performed to re-examine and control the results of the association between anxiety and individual EMSs. Only 12 out of 18 EMSs have shown a correlation between anxiety and EMSs. The correlation between anxiety and individual schemas is significant when chi-square value exceeds df. This included *Abandonment/Instability* (χ^2 (N = 110) = 679.223^a > df, p <.05); *Mistrust/Abuse* (χ^2 (N = 110) = 679.223^a > df, p <.05); *Defectiveness/Shame* (χ^2 (N = 110) = 574.801^a > df, p <.05); *Failure* (χ^2 (N = 110) = 651.607^a > df, p <.05); *Vulnerability to Harm/Illness* (χ^2 (N = 110) = 646.264^a > df, p <.05); *Enmeshment/Undeveloped Self* (χ^2 (N = 110) = 533.647^a > df, p <.05); *Subjugation/Invalidation* (χ^2 (N = 110) = 565.298^a > df, p <.05); *Unrelenting Standard* (χ^2 (N = 110) = 695.031^a > df, p <.05); *Insufficient Self-Control/Self-Discipline* (χ^2 (N = 110) = 478.103^a > df, p <.05); *Approval-Seeking/Recognition-Seeking* (χ^2 (N = 110) = 675.996^a > df, p <.05); *Negativity/Pessimism* (χ^2 (N = 110) = 607.000^a > df, p <.05); and *Punitiveness* (χ^2 (N = 110) = 613.746^a > df, p <.05).

On the other hand, *Emotional Deprivation*, *Social Isolation/Alienation*, *Dependence/Incompetence*, *Self-Sacrifice*, *Emotional Inhibition*, and *Entitlement/Grandiosity* showed no significant correlation with the level of anxiety.

Table 3. Chi-Square test between anxiety and EMSs

	Value	df	Asymp. Sig. (2-sided)
Anxiety Level * ED	469.151 ^a	475	.567
Anxiety Level * AB	679.223 ^a	550	.000
Anxiety Level * MA	715.139 ^a	600	.001
Anxiety Level * SI	508.296 ^a	525	.692
Anxiety Level * DS	574.801 ^a	500	.011
Anxiety Level * FA	651.607 ^a	550	.002
Anxiety Level * DI	425.096 ^a	450	.795
Anxiety Level * VH	646.264 ^a	600	.093
Anxiety Level * EM	533.647 ^a	500	.144
Anxiety Level * SB	565.298 ^a	525	.109
Anxiety Level * SS	480.177 ^a	525	.920
Anxiety Level * EI	473.233 ^a	475	.514
Anxiety Level * US	695.031 ^a	550	.000
Anxiety Level * ET	462.129 ^a	475	.655

Anxiety Level * IS	478.103 ^a	475	.451
Anxiety Level * AS	675.996 ^a	600	.017
Anxiety Level * NP	607.000 ^a	550	.046
Anxiety Level * PU	613.746 ^a	575	.128

3.5 The Importance of Demographic Variables in Determining the Anxiety Level & EMSs

The last objective of the study was to examine if there are any demographic variables that influence the level of anxiety and acquisition of early maladaptive schemas (EMSs). This was divided in two major parts: 1) the analysis of relationship between demographic variables and anxiety level and 2) the analysis of relationships between demographic variables and early maladaptive schemas. The Exploratory data analysis (EDA) was used to determine the relationships among categorical variables.

3.6 Demographic Influence on Anxiety Level

There is relatively no difference in terms of age and anxiety level (Figure 4.1). On the most basic level, there is a sex differences in anxiety. In Figure 4.2, women on average, experience higher level of anxiety (mean=51.24) compare to men (mean=47.21). Those who are in a relationship (mean=53.1) (Figure 4.3), experience a greater level of anxiety compared to those who identified their relationship as “it’s complicated” (mean=49.5) and single (mean=47.61). In terms of academic year (Figure 4.4), sophomore (mean=50.46) and senior students (mean=49.93, Std.Dev. =8.956) have a slightly higher level of anxiety compared to junior students (mean=48.78, Std. Dev. =7.128). In terms of ethnicity (Figure 4.5), there was not much difference in terms of anxiety level except the Japanese case where the mean is 56 which is relatively higher than other ethnic groups. The lowest levels of anxiety are among Thai-Chinese (mean=44.33) and Chinese (mean=46.55) ethnic group. Interestingly in Figure 4.6, Tourism and Hospitality Management is at the top in terms of anxiety level at 54 on average following closely by Business Economics (53.5) and Computer science (52).



Figure 4. Demographic variables and level of anxiety

3.7 Demographic Influence on Early Maladaptive Schemas (EMSs)

On average, female students scored higher in 12 out of 18 of early maladaptive schemas in which they scored higher in all schemas under Domain 1, 3, and 4 (Figure 5). Female students have higher scores in all of the EMSs in *Domain 1 Disconnection & Rejection* included Emotional Deprivation, Mistrust/Abuse, Emotional Inhibition, Defectiveness/Shame, and Social Isolation/Alienation; Domain 3 *Impaired Limits* included Entitlement/Grandiosity and Insufficient Self-Control/Self-Discipline; and *Domain 4 Excessive Responsibility & Standards* which included Self-Sacrifice and Unrelenting Standards/Hypercriticalness. Only in *Domain 2 Impaired Autonomy & Performance*, male students scored higher in 4 out of 6 schemas including Dependence/Incompetence, Vulnerability to Harm or Illness, Enmeshment/Undeveloped Self, and Subjugation/Invalidation; whereas female students scored higher in Abandonment/Instability and Failure. Also in unclassified schemas, male students scored higher in 2 out of 3 schemas which included Approval-Seeking/Recognition-Seeking and Negativity/Pessimism; while female students scored higher in Punitiveness.

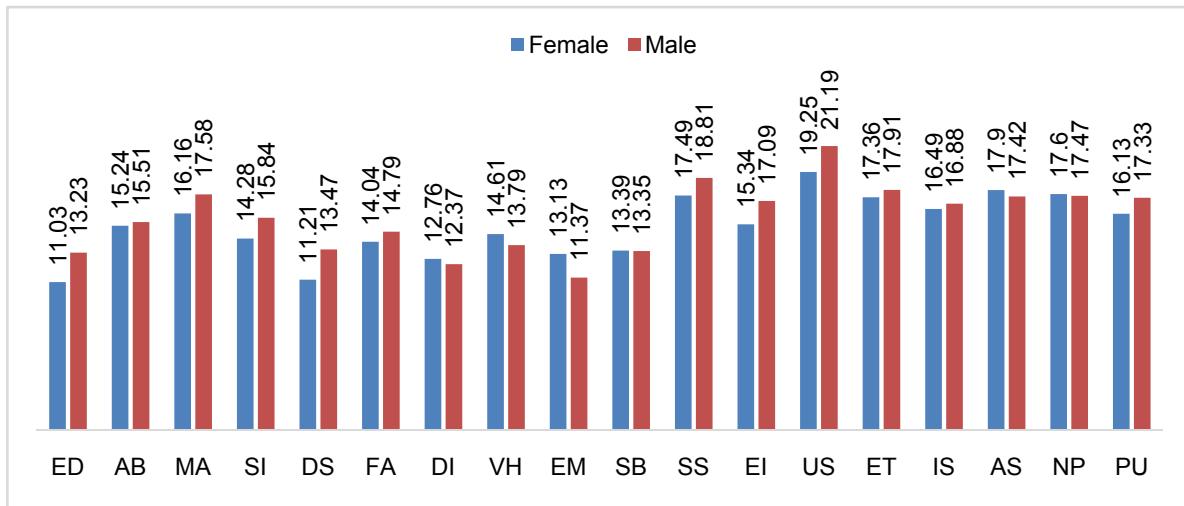


Figure 5. Gender & schema

In Figure 6, the chart displays the EMSs' score which is categorized into each relationship status to show that certain relationship status are more vulnerable to EMSs. In terms of relationship's influence over early maladaptive schemas, people who were in a relationship scored higher in 8 out of 18 EMSs, primarily in Negativity/Pessimism, Approval-Seeking/Recognition-Seeking, Self-Sacrifice, Emotional Inhibition, and Abandonment/Instability. In general, single participants scored higher primarily in Unrelenting Standard/Hypercriticalness, Entitlement/Grandiosity, and Mistrust/Abuse. While those in a complicated relationship scored very low in most of the schemas except Unrelenting Standard/Hypercriticalness, Isolation/Alienation, and Self-Sacrifice.

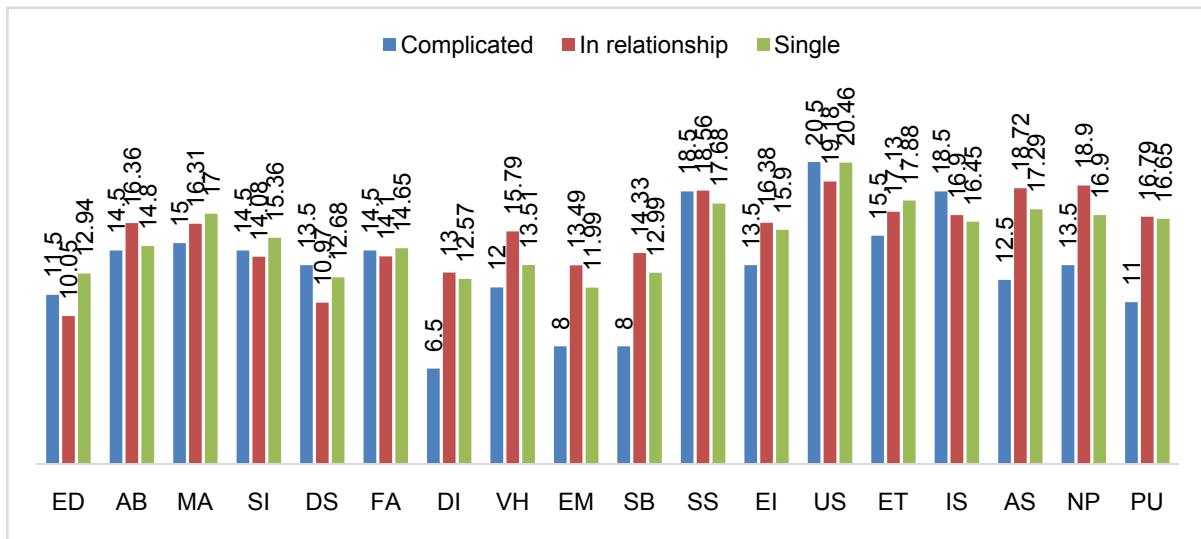


Figure 6. Relationship status & schema

In the Figure 7, the three leading EMSs among each ethnic group are displayed to assess the similarity and difference between ethnic groups in terms of their schema and see if there is an underlying cultural influence over an acquisition of early maladaptive schemas. Among 12 ethnic groups assessed in the study, 8 out of 12 are high in terms of Unrelenting Standard/Hypercriticalness, most of which are Asian. Unrelenting Standards/Hypercriticalness is the highest EMSs among Indian, Japanese, Thai, Chinese, American, Bhutanese, and Korean. Following by Approval-Seeking/Recognition-Seeking which are in 7 countries. Interestingly, Unrelenting Standard/Hypercriticalness often was accompanied by Approval-Seeking/Recognition-Seeking in 5

of the ethnic groups.

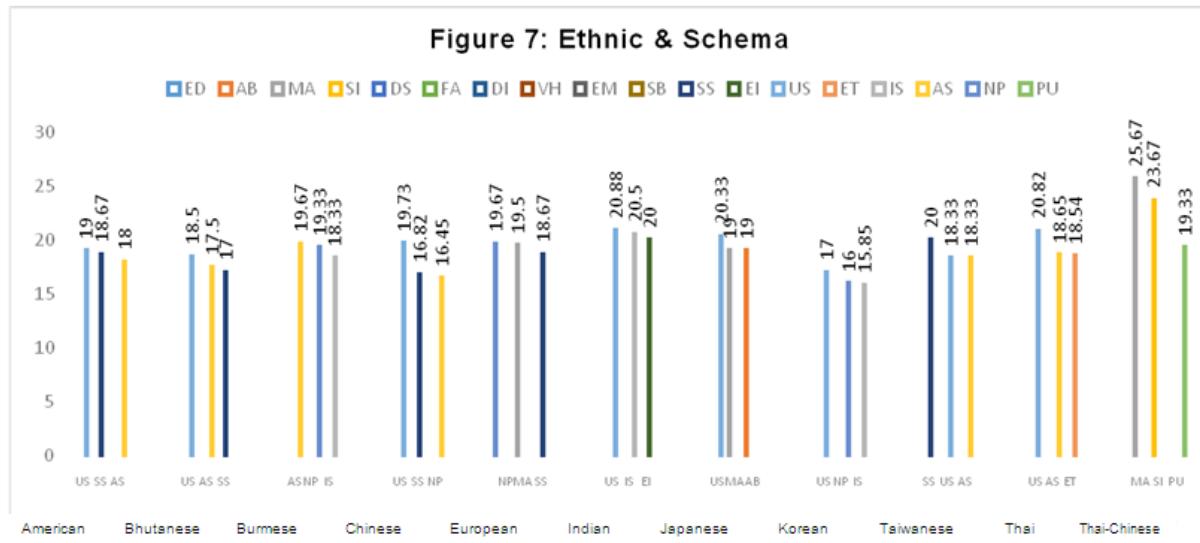


Figure 7. Ethnic & schema

The three main EMSs of each major are chosen to display in Figure 8 to assess whether there are specific EMSs characterized in each individual major. *Unrelenting Standard/Hypercriticalness* again is the primary EMSs in 9 of 11 majors, it is the leading EMSs in 8 majors including Applied Mathematics, Biomedical Science, Business Economic, Finance, Food Science, International Business, Marketing, and Social Science. This was second by *Approval-Seeking/Recognition-Seeking* among 7 majors similar to the results of ethnicity and followed by *Self-Sacrifice* which characterized 5 of the majors which are Biomedical Science, Communication Design, Food Science, International Business and Marketing.

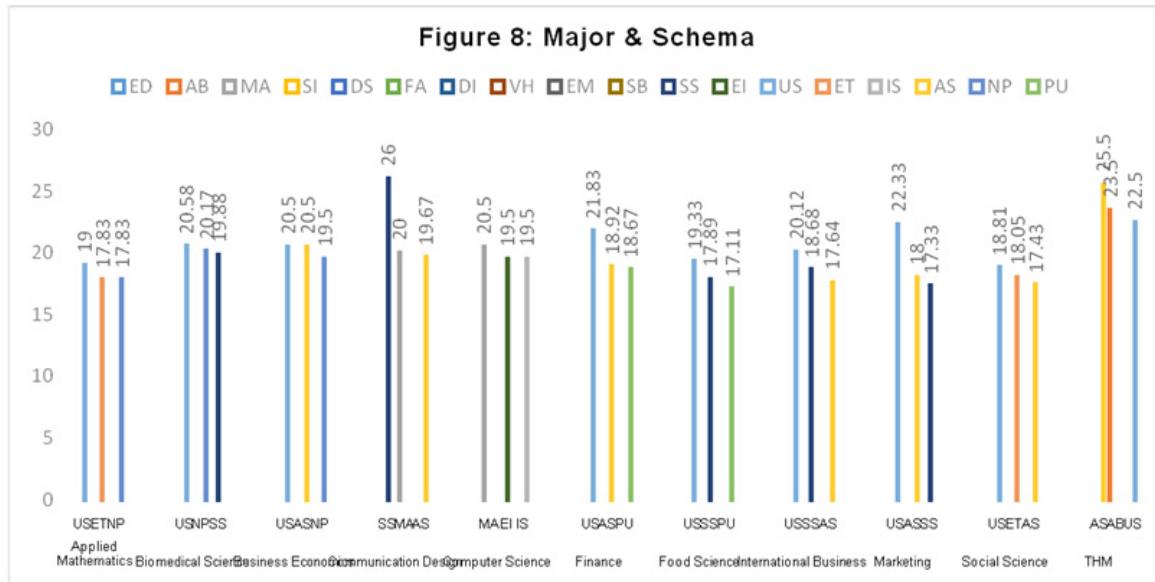


Figure 8. Major & Schema

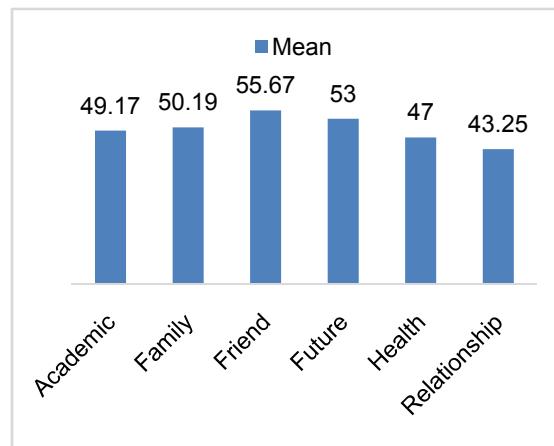


Figure 9. Stress & anxiety

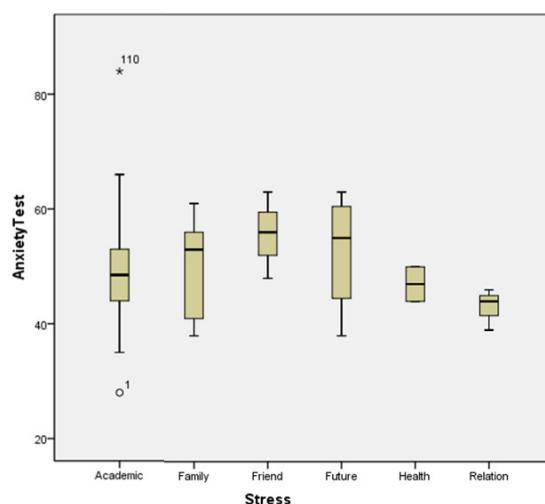


Figure 10. Box plot of interaction between stress and anxiety

3.8 The Relation between Source of Stress with Anxiety and EMSs

From the Figure 9, friends are the source of stress that link to the highest level of anxiety with an average at 55.67 which was followed by future, family, and academics. Most of the 4th year students said future, particularly academic and occupational future, was their major source of stress. Over half of the respondents have academics as their major source of stress. As can be seen in Figure 10, the box plot shows that that the extreme levels of anxiety include academics as their major source of stress.

Figure 11: Stress & Schema

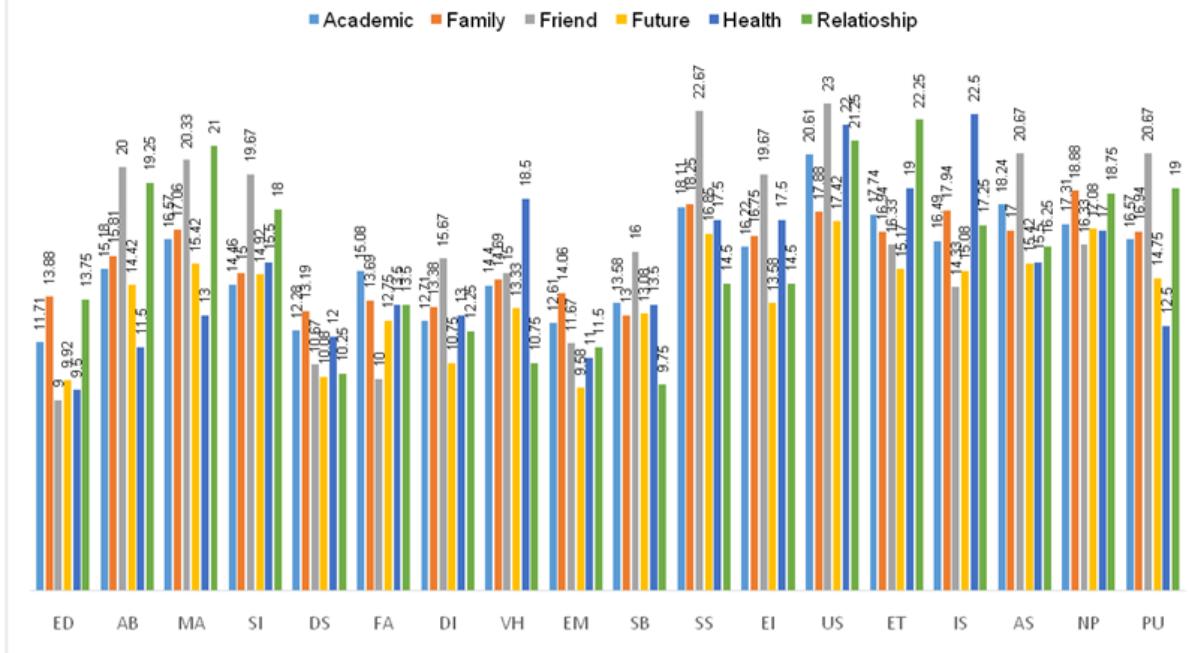


Figure 11. Stress & schema

From Figure 11, it is interesting to note that many reported a friend as the source of stress exhibiting a strong relationship with most of the schemas, and is the highest in 10 of the EMSs included *Abandonment/Instability*, *Mistrust/Abuse*, *Social Isolation/Alienation*, *Dependence/Incompetence*, *Subjugation/Invalidation*, *Self-Sacrifice*, *Emotional Inhibition*, *Unrelenting Standard/Hypercriticalness*, *Approval-Seeking/Recognition-Seeking*, and *Punitiveness*. The two highest associations are *Unrelenting Standard/Hypercriticalness* and *Self-Sacrifice*, whereas, family as the source of stress is the most associated with *Negativity/Pessimism* and *Self-Sacrifice*. The highest associated EMSs with academic stress are *Unrelenting Standard/Hypercriticalness* and *Approval-Seeking/Recognition-Seeking*. *Unrelenting Standard* is also the most associated EMSs to future as a source of stress.

4. Discussion

The results of this correlation analysis between the variables indicated that over 14 of the EMSs were predictive of anxiety symptoms. The results done with Pearson's test showed a correlation between 14 out of 18 early maladaptive schemas and anxiety levels with strong correlations at *Vulnerability to Harm or Illness*, *Abandonment/Instability*, and *Negativity/Pessimism*. Whereas, the chi-square's result showed that only 12 out of 18 early maladaptive schemas are correlated with anxiety symptoms. Although there was a minor difference in the correlation, the results are consistent with one another. Out of the differences in the EMSs that are not significantly correlated with anxiety, both results revealed that *Emotional Deprivation*, *Self-Sacrifice*, and *Entitlement/Grandiosity* are the EMSs that show no correlations with the level of anxiety. Particularly the two most correlated EMSs: *Vulnerability to Harm or Illness* and *Abandonment/Instability* predicted the increases in the symptoms of anxiety as confirmed by some of the previous studies including Glaser (2002), Lumley and Harkness (2007) and Welborn et al. (2002) which provided the hypothesis that individuals with *Vulnerability to Harm or Illness* believe that danger is imminent, or *Abandonment/Instability* who believe in their inability to cope with everyday life and responsibilities on their own tends to experience a greater level of anxiety compared to those with more adaptive schemas.

Our findings indicate the importance of the role of gender in predicting anxiety. Females experienced greater levels of anxiety relative to their male counterparts. A number of studies (e.g. Kendler et al., 1992; Shear, 1997; Richard, 2007) have suggested that women are approximately twice as likely to experience anxiety and meet criteria for anxiety disorders such as generalized anxiety disorder and panic disorder. The total scores of YSQ are significantly higher in females who scored higher in 12 out of 18 early maladaptive schemas. They occupied the

whole Domain 1 Disconnection& Rejection, Domain 3 Impaired Limits and Domain 4 Excessive Responsibility and Standard. Seemingly, female students are more likely to develop early maladaptive schemas than males. This may be due to the influence of gender-associated expectation and cognition that results from social learning acting upon the psychological adaptation of the individual (Callahan, 2000). In regard to Asian culture, where boys are more highly regarded to girls (preference for sons as opposed to daughters and concepts of patriarchal imperatives), some aspects of male supremacy seem to deprive girls of emotional support and social power which may contribute to females response within the Disconnection and Rejection domain. Hence, this may motivate some females towards empowerment, attention, and admiration to fulfill their lack of power and recognition which explains their high score in Impaired Limits domain. In terms of Excessive Responsibility & Standard domain, females scored higher on both Self-Sacrifice and Unrelenting-Standard which represents the conformation to their unequal social role. Women are expected to be responsible for the family's wellbeing and to value social relationships more than men (Calvete et al., 2005). In Asia it is often claimed that women are born with a biological sense of motherhood which corresponds to the Self-Sacrifice schema as it is related to the acquisition of self-esteem through helping others. When one is driven toward sacrificing for the sake of others, one may impose great expectations on themselves. This may account for the higher score on Unrelenting Standard among female participants.

Ethnically, Japanese on average experience higher levels of anxiety comparative to other ethnic groups, especially Thai-Chinese which on average experience much lower levels of anxiety. Huang and Ting (2008) have shown that culture is strongly associated with the expression of anxiety symptoms and disorders. Among 12 ethnic groups that were assessed in the study, $\frac{3}{4}$ of them are highest in terms of *Unrelenting Standard/Hypercriticalness*, most of which are Asian. This included Indian, Japanese, Thai, Chinese, Bhutanese, and Korean. In most of the cases, *Unrelenting Standard/Hypercriticalness* is accompanied by *Approval-Seeking/Recognition-Seeking*, at least among five of the ethnic group in this study. Overall, 52.7 % are in the very high scale in *Unrelenting Standard/Hypercriticalness*, while the second highest is *Approval-Seeking/Recognition-Seeking* at 33.6%.

Unrelenting Standard/Hypercriticalness and *Approval-Seeking/Recognition-Seeking* are the two major schemas characterized the majority of the participants who share an Asian cultural background (94.6%). By all means, Asian countries' cultural values revolve around face, recognition, and reputation which characterized the major aspects of collectivism culture (Veenhoven, 1999). Collectivism is a mechanism for organizing and reinforcing group cohesion within society (Triandis et al., 1990). Rather than being an independent self, people from collectivist culture finds it's important to conform to social pressure and seek for approval from others, thus the formation of the interdependent self. It is assumed that one must be successful to be accepted by people in society whether they are your family members, friends, or unfamiliar others. As a result, people are driven toward achievements that are challenging and driven towards perfection in order to be well-recognized and approved of by others which would explained why *Unrelenting Standard/Hypercriticalness* and *Approval-Seeking/Recognition-Seeking* are the leading schemas for most of the participants who are mostly Asian.

4.1 Limitations and Future Research Directions

Although the present study provides information about the association between EMSs and anxiety symptoms, it is not without limitations. Firstly, the study was based only on an undergraduate sample which means that the findings might not be representative of general populations. Therefore, it is important for the future studies to address this issue by testing it on both clinical and non-clinical samples in various sectors of society and of various ages, ethnic backgrounds, etc. Secondly, by measuring primarily anxiety level and EMSs, it may have excluded the possibility of other influential factors that could have been taken in account rather than just anxiety and cognitive schemas—distress for example. Therefore, the future studies could measure the stressors, schemas, and distress symptoms in longitudinal terms to see whether it is the stressor or level of stress that moderates the results of anxiety, schemas and vice versa.

As the results of the study have suggested demographic influences over schemas, future research may extend this study by measuring more demographic factors and their relation with early maladaptive schemas as well as incorporating social and biological aspects which might be relevant. Also, it would be interesting to see if there is a life-span development in terms of individual cognitive schemas. This would reveal the importance of childhood experience in determining adulthood schemas as well as the change in schemas of individuals throughout their lifespan. Therefore, future research could address this by conducting longitudinal research on early maladaptive schemas to see if there are potential causes (i.e. environmental influence or dynamic of one's family) or any long-term changes (i.e. career choice and relationship) within an individual's life that are

influenced by the early maladaptive schemas.

5. Conclusion

In conclusion, the results of this study show that certain early maladaptive schemas are risk factors for the development of anxiety symptoms in undergraduate students. *Vulnerability to Harm or Illness*, schemas related to the fear of an imminent threat in health, emotional state, and external environment; *Abandonment/Instability* which related to emotional support that will not be adequately satisfied or perceived instability of other; and *Negativity/Pessimism* which related to the focus on the negative aspects of life and always expecting things to go wrong are three major predictors of anxiety in particular.

For many students, university life is a period of great change. Most people transit from adolescence to adulthood in this period. The burden of facing the unfamiliar starting from the first year of study until graduation where many are still unsure of their life's choice and their future, causes lots of stress. The likelihood of experiencing stressful events increases and the individual has to face it on their own. These transitional life changes may increase the likelihood of developing or activating one's early maladaptive schemas. Collectivist culture by nature emphasizes over achievement and recognition by others. As present in this study, some schemas are embedding in its societal values and norms which embody particular expectations that convince individuals to conform both cognitively and behaviorally. Unrelenting Standard/Hypercriticalness and Approval-Seeking/Recognition-Seeking are the two leading schemas which characterized the majority of participants who are generally of Asian cultures which emphasize the need to be approved of by others and the infinite drive towards responsibility and perfection.

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